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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,616	09/13/2004	Chibbi Naaman	254294US2PCT	4397

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EXAMINER	
NALVEN, EMILY IRIS	
ART UNIT	PAPER NUMBER
3744	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/19/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/19/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/506,616	NAAMAN, CHIBBI	
	Examiner	Art Unit	
	Emily I. Nalven	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *Sept. 13, 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of a certified copy of the Israeli Patent No. 148616 application referred to in the oath or declaration or in an application data sheet. If this copy is being filed to obtain the benefits of the foreign filing date under 35 U.S.C. 119(a)-(d), applicant should also file a claim for such priority as required by 35 U.S.C. 119(b). If the application being examined is an original application filed under 35 U.S.C. 111(a) (other than a design application) on or after November 29, 2000, the claim for priority must be presented during the pendency of the application, and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior foreign application. See 37 CFR 1.55(a)(1)(i). If the application being examined has entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the claim for priority must be made during the pendency of the application and within the time limit set forth in the PCT and Regulations of the PCT. See 37 CFR 1.55(a)(1)(ii). Any claim for priority under 35 U.S.C. 119(a)-(d) or (f) or 365(a) or (b) not presented within the time period set forth in 37 CFR 1.55(a)(1) is considered to have been waived. If a claim for foreign priority is presented after the time period set forth in 37 CFR 1.55(a)(1), the claim may be accepted if the claim properly identifies the prior foreign application and is accompanied by a grantable petition to accept an unintentionally delayed claim for priority. See 37 CFR 1.55(c). This certified foreign priority patent does not have any relevance to the claims the applicant is

making in PCT/II02/00681. It is also noted that the applicant submitted the incorrect foreign priority document and did not claim foreign priority in the specification or oath/declaration section of the application.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Spiral Shaped Heat Exchanger with Pin Fins.

Claim Objections

Claim 12 is objected to because of the following informalities: "the plate" (line 3) and "said plate" (line 3) are presumed to be -- the thermally conductive base plate -- and -- said thermally conductive base plate -- respectively.

Claim 14 is objected to because of the following informalities: "first inlet" (line 12) and "second inlet" (line 13) are presumed to be --first outlet -- and – second outlet -- respectively because the fluid is being driven through the conduit and must exit at the outlet. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-2, 6-13 and 17 are rejected under 35 U.S.C. 102(a) as being anticipated by Klett et. al. (US Patent No. 6,430,935).

In regard to claim 1, Klett et. al. teach an apparatus (100) for exchanging heat (see Fig. 1 and col 5 lines 58-60), the apparatus (100) comprising at least one conduit (575) having a spiral shape for conditioned fluid to flow through (see Fig. 5 and col 9 lines 37-38), at least one heat sink (510, 520) compartment (see Fig. 5 and col 9 line 35), a chip layout comprising at least one thermoelectric unit (130) positioned between the at least one conduit (575) and the at least one heat sink compartment (510, 520) such that a first surface of the chip layout is in contact with the fluid conduit and a second surface is in contact with the heat sink compartment (510, 520) (see Fig. 1 and Fig. 5 and col 6 lines 20-32).

In regard to claim 2, Klett et. al. teach an apparatus (100) wherein the at least one heat sink compartment (510, 520) is a conduit (531-539 and 541-549) having an inlet (575) and an outlet (531-539 and 541-549) for allowing the fluid to flow through (col 9 lines 35-40).

In regard to claim 6, Klett et. al. teach an apparatus (100) wherein the fluid to be conditioned is air (col 9 lines 35-40).

In regard to claim 7, Klett et. al. teach an apparatus (100) wherein the fluid driven through the heat sink (510, 520) is air (col 9 lines 35-40).

In regard to claim 8, Klett et. al. teach an apparatus (100) wherein a fluid driven through the heat sink (510, 520) is water. A recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which

differentiates it from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

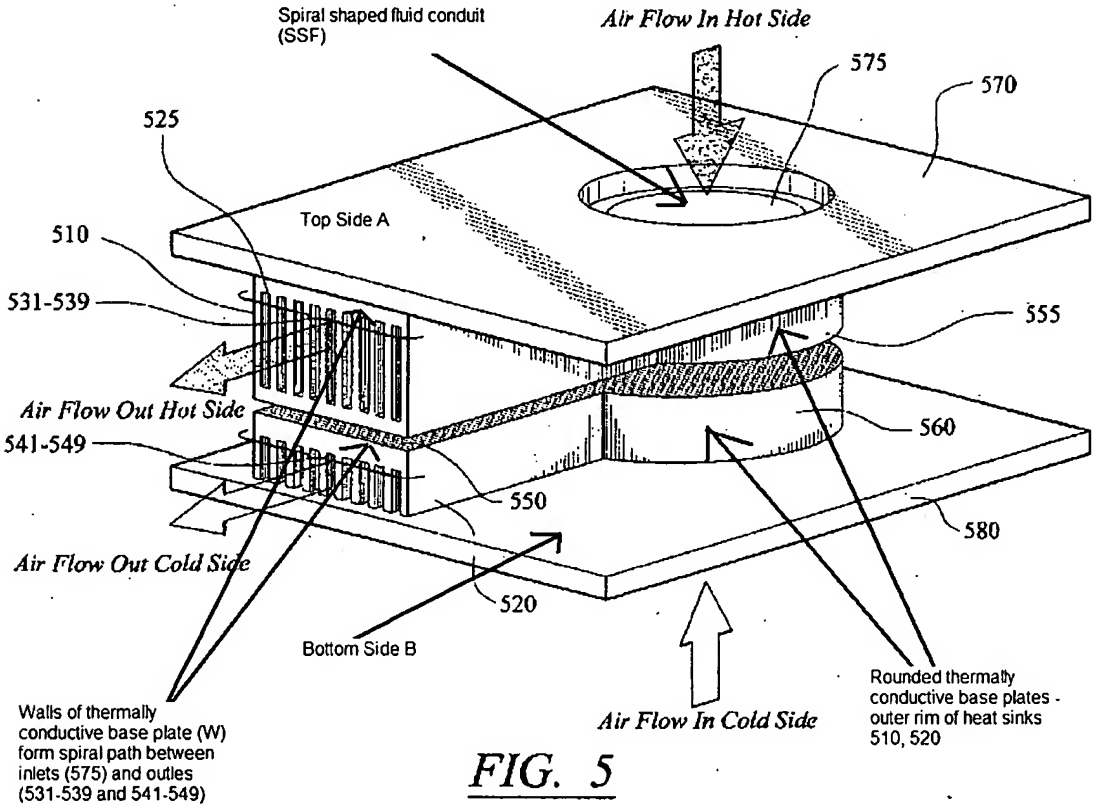

FIG. 5

In regard to claim 9, Klett et. al. teach an apparatus (100) wherein the spiral shaped fluid conduit (see Fig. 5) comprises a rounded thermally conductive base plate (edges of 510, 520) (col 6 lines 10-11, blocks 110 and 120 in Fig. 1 represent blocks 510 and 520 in Fig. 5 and are different embodiments of the same invention), wherein the plate is in contact with one surface of the thermoelectric layout (550) (see annotated Fig. 5 above and col 9 lines 42-45) and further comprising walls (W) perpendicular to the plate, the walls (W) forming a spiral path. It is interpreted that the walls

(W) of the conductive base plate (510, 520) are the sides parallel to plates (570 and 580) and the rounded thermally conductive base plates are the edges of 510 and 520 perpendicular to plates 570 and 580.

In regard to claim 10, Klett et. al. teach an apparatus (100) wherein the first fan (140) is positioned at a center of the spiral path (SSF) (see annotated Fig. 5 above). Fan 555 in annotated Fig. 5 above represents fan 140 from the first embodiment of this invention.

In regard to claim 11, Klett et. al. teach an apparatus (100) wherein the spiral path (SSF) is provided with a plurality of pin fins perpendicularly protruding from the plate (col 9 lines 21-23).

In regard to claim 12, Klett et. al. teach an apparatus (100) wherein the heat sink (510, 520) comprises a thermally conductive base plate (col 6 lines 10-11, blocks 110 and 120 in Fig. 1 represent blocks 510 and 520 in Fig. 5 and are different embodiments of the same invention) and a plurality of thermally conductive pin fins (col 9 lines 21-23) perpendicular to the plate (edges of 510, 520 perpendicular to 570 and 580) (see annotated Fig. 5 above) and wherein dimensions of said plate (edges of 510, 520 perpendicular to 570 and 580) are substantially the same as dimensions of the rounded plate of the spiral fluid conduit (SSF) (see annotated Fig. 5 above). It is interpreted that "substantially the same" is that the spiral fluid conduit (SSF) is the primary volume and element of the entire heat exchange apparatus (100).

In regard to claim 13, Klett et. al. teach an apparatus (100) for use as a fluid conditioner for directing conditioned fluid to a specific location through a conduit (SSF) connected to the outlet (531-539 and 541-549) of the spiral shaped conduit (SSF) (see annotated Fig. 5 above and col 9 lines 35-40).

In regard to claim 17, Klett et. al. teach a method for conditioning fluid by a heat exchange apparatus (100) comprising driving a first fluid to be heated or cooled through a first compartment (510) of a heat exchange apparatus (100), activating a layout comprising at least one thermoelectric chip (130) for forming a temperature gradient between the first and second surfaces (131, 132) of the layout wherein the first surface is in contact with the first compartment (510) and the second surface is in contact with the second compartment (520) (see annotated Fig. 5 above and col 6 lines 20-25). Blocks 110 and 120 in Fig. 1 represent blocks 510 and 520 in Fig. 5 and are different embodiments of the same invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-5, 14-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klett et. al. (US Patent No. 6,430,935) in view of Walker et. al. (US Patent No. 5,046,327).

In regard to claim 3, Klett et. al. teach an apparatus (100) comprising a first fan (140) for driving the fluid to be conditioned through the spiral-shaped fluid conduit (531-539 and 541-549) but do not positively recite that there is a motor that is driving the fan. Walker et. al. teach a squirrel cage fan comprising a motor (386) and a first fan connected to the motor (386) for driving the fluid to be conditioned (col 8 lines 43-45). It would have been obvious at the time of the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

In regard to claim 4, Klett et. al. teach an apparatus (100) further comprising a second fan (150) for driving fluid through the heat sink compartment (510, 520) but do not explicitly teach a motor. Walker et. al. explicitly teach a motor (386) is a double shaft motor having two opposite coaxial spinning shafts and the first and second fans are connected each to one of the two opposite shafts (col 8 lines 43-45). It would have been obvious at the time of the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most

efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

In regard to claim 5, Klett et. al. teach a heat exchange apparatus (100) that contains fans (555, 560) in the heat sink compartment (510, 520) (col 9 lines 35-40) but do not explicitly state that a motor powers the fans. Walker et. al. explicitly teach a motor (386) to power cooling fans (col 8 lines 43-45). It would have been obvious at the time of the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

In regard to claim 14, Klett et. al. teach a heat exchange apparatus (100) for use as a compact air-conditioning unit (col 5 lines 58-60), the apparatus (100) comprising a spiral-shaped conditioned-air compartment (SSF) having a first inlet (575A) and a first outlet (531-539), a heat sink compartment (510, 520) having a second inlet (575B) and a second outlet (541-549) (see annotated Fig. 5 above), a thermoelectric array comprising at least one thermoelectric chip (130), positioned between the conditioned-air compartment and the heat sink compartment (510, 520) (see Fig. 1 and annotated Fig. 5 above and col 6 lines 10-1) Blocks 110 and 120 in Fig. 1 represent blocks 510 and 520 in Fig. 5 and are different embodiments of the same invention. Fans 555 and 560 in Fig. 5 represent

fans 140 and 150 in Fig. 1 and are representations of different embodiments of the same invention.

Klett et. al. also teach that when electric current is passed through the array (130) a temperature gradient is formed between the conditioned-air compartment (100) and the heat sink compartment (510, 520) (col 6 lines 33-40) and two fans (555 and 560) mounted opposite each other (see Fig.1 and annotated Fig. 5 above).

Klett et. al. also teach that the first fan is mounted in the conditioned air compartment (510) for driving ambient air through the first outlet (531-539) and the second fan (560) is mounted in the heat sink compartment (520) for driving ambient air through the second outlet (541-549) but Klett et. al. do not explicitly teach a motor and shaft to mount the fans atop.

Walker et. al. explicitly teach a motor (386) having two opposite coaxial spinning shafts (col 8 lines 43-45). It would have been obvious at the time of the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

In regard to claim 15, Klett et. al. teach an apparatus (100) wherein the conditioned air compartment comprises a first heat transfer (510) unit fabricated from a thermally conductive material (col 6 lines 10-11), the heat transfer unit comprises a base plate and perpendicular walls (W) forming a spiral path (SSF) and wherein the first inlet (575A) and the first outlet (531-539) are located at the inner end and the outer end of the spiral path, respectively (see annotated Fig. 5 above).

In regard to claim 16, Klett et. al. teach an apparatus (100) containing a heat sink compartment (510, 520) such that heat generated during operation of the fan (555, 560) is transferred to the air flowing through the heat sink compartment (510, 520) (col 9 lines 35-50) but Klett et. al. do not explicitly teach a motor for driving the fans (555, 560). Walker et. al. explicitly teach a motor (386) having two opposite coaxial spinning shafts (col 8 lines 43-45). It would have been obvious at the time of the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

In regard to claim 18, Klett et. al. teach a method for driving both the first fluid and the second fluid through the first and second compartments (510, 520) (col 9 lines 35-40) but do not explicitly teach a motor for driving the fans. Walker et. al. explicitly teach a motor (386) for driving fans in a heat exchanger (col 8 lines 43-45). It would have been obvious at the time of

the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

In regard to claim 19, Klett et. al. teach a method for cooling wherein a first fan (555) draws the first fluid through the first compartment (510) and the second fan (560) draws the second fluid through the second compartment (520) but do not explicitly teach a motor and shaft is used to rotate the fans (555 and 560). Fans 555 and 560 in Fig. 5 represent fans 140 and 150 in Fig. 1 and are representations of different embodiments of the same invention.

Walker et. al. explicitly teach a motor (386) is provided with two opposite coaxial spinning shafts (col 8 lines 43-45). It would have been obvious at the time of the invention to place the motor driving the squirrel cage fan as taught by Walker et. al. in the heat exchange apparatus as taught by Klett et. al. because utilizing a motor to rotate the fan is the most efficient and reliable method for ensuring a steady supply of fluid is cooled in the heat exchangers.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Guy (US Patent 6,580,025 B2) teaches a double shaft motor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily I. Nalven whose telephone number is 571-272-3045. The examiner can normally be reached on Monday - Thursday 8 AM - 5:30 PM and on alternate Fridays 8 AM – 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emily Iris Nalven
Art Unit 3744

CHERYL TYLER
SUPERVISORY PATENT EXAMINER